





Date: Friday, 25/01/2008 1:15:54 PM
 User: Linda Lacelle



Customer : CU-DAR001 Dart Helicopters Services Job Number : 37023 Estimate Number : 12817 P.O. Number : This Issue : 25/01/2008 S.O. No. : Prsht Rev. : NC First Issue : 25/01/2008 Type : LANDING GEAR Previous Run : 32188 Written By : <i>[Signature]</i> Checked & Approved By : <i>[Signature]</i> Comment : Est Rev: New Issue 07-04-05 JLM	Drawing Name : 412 X-TUBE INST, LOW NARROW AFT Part Number : D412664205 Drawing Number : D412-664 -245 REV C Project Number : N/A Drawing Revision : C Material : Due Date : 01/02/2008 Qty: 1 Um: Each
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Additional Product



Job Number: 

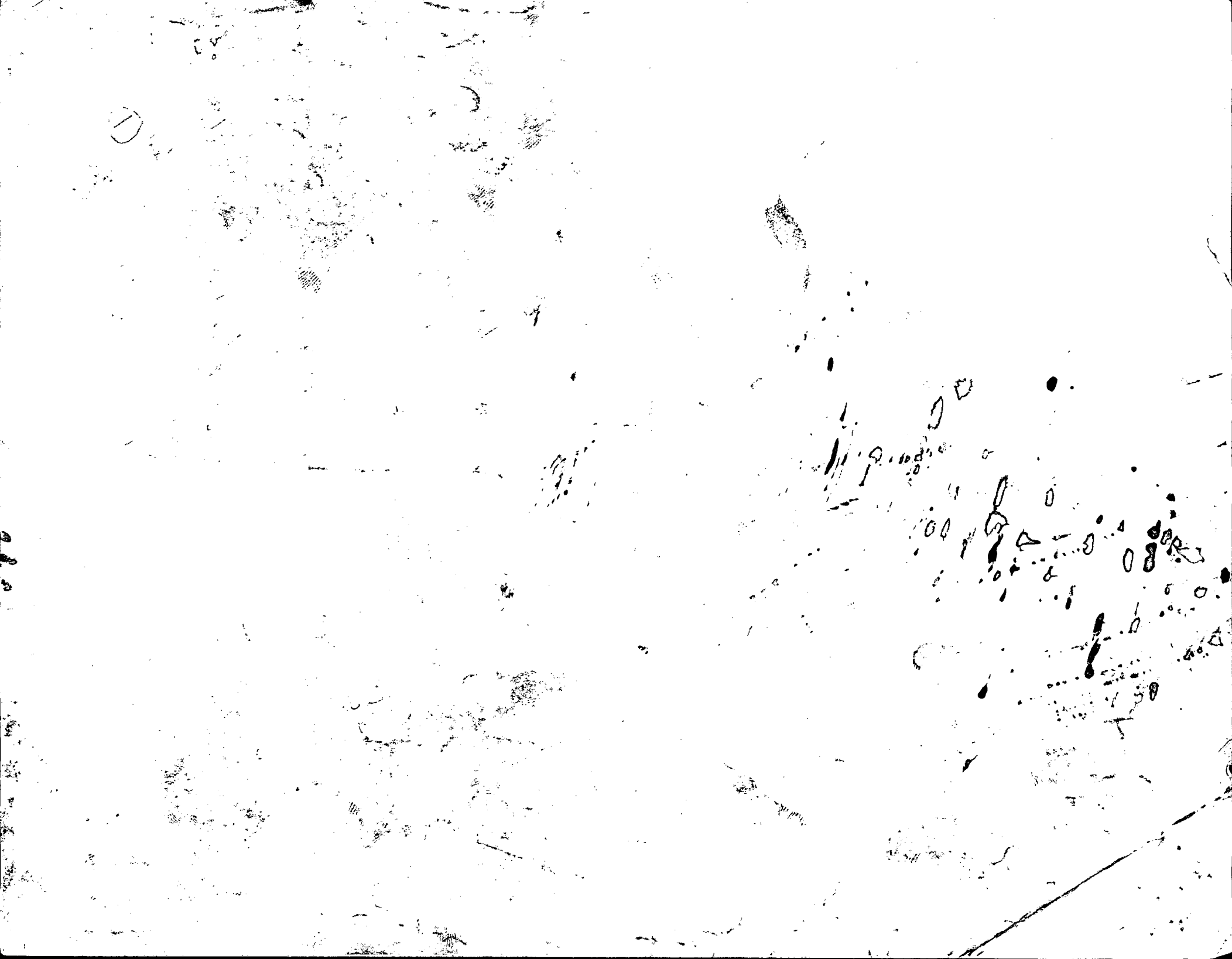
Seq. #:	Machine Or Operation:	Description :
1.0	DC	DOCUMENT CONTROL
		
Comment: DOCUMENT CONTROL Photocopy bluefile and create labels as per PPP D412-664-205 CHG001		

2.0	D6009129	Crosstube Material
		
Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s) Pick: Qty Part number Description Batch 1 D6009-129 Crosstube <i>32306</i> Check OD = 3.500"; ID = 2.250"		

3.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
		
Comment: 1-TURN AS PER FOLIO FA690 & DWG D412-664-245, FOLIO REV: <i>C</i> DWG REV: <i>C</i> 2-DEBURR AS REQUIRED		

4.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE
		
Comment: INSPECT PARTS AS THEY COME OFF MACHINE		

5.0	QC8	SECOND CHECK
		
Comment: SECOND CHECK		



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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 37023

Part Number: D412664205

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Polish entire outside surface of crosstube

AWM 08-02-06

7.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

AWM 08-02-07

9.0

QC3/5

INSPECT WORK/WING WALK



Comment: Inspect work & Chemical conversion Coat

DP 8-2-7

10.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D412-664-243 using CNC bender program 412-af and Folio FT010

EL 8-2-7

11.0

QC5

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

08-02-07 (1)

12.0

D36061

CUFF



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

CUFF

Batch: B31635

(2) 8-2-7

13.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1

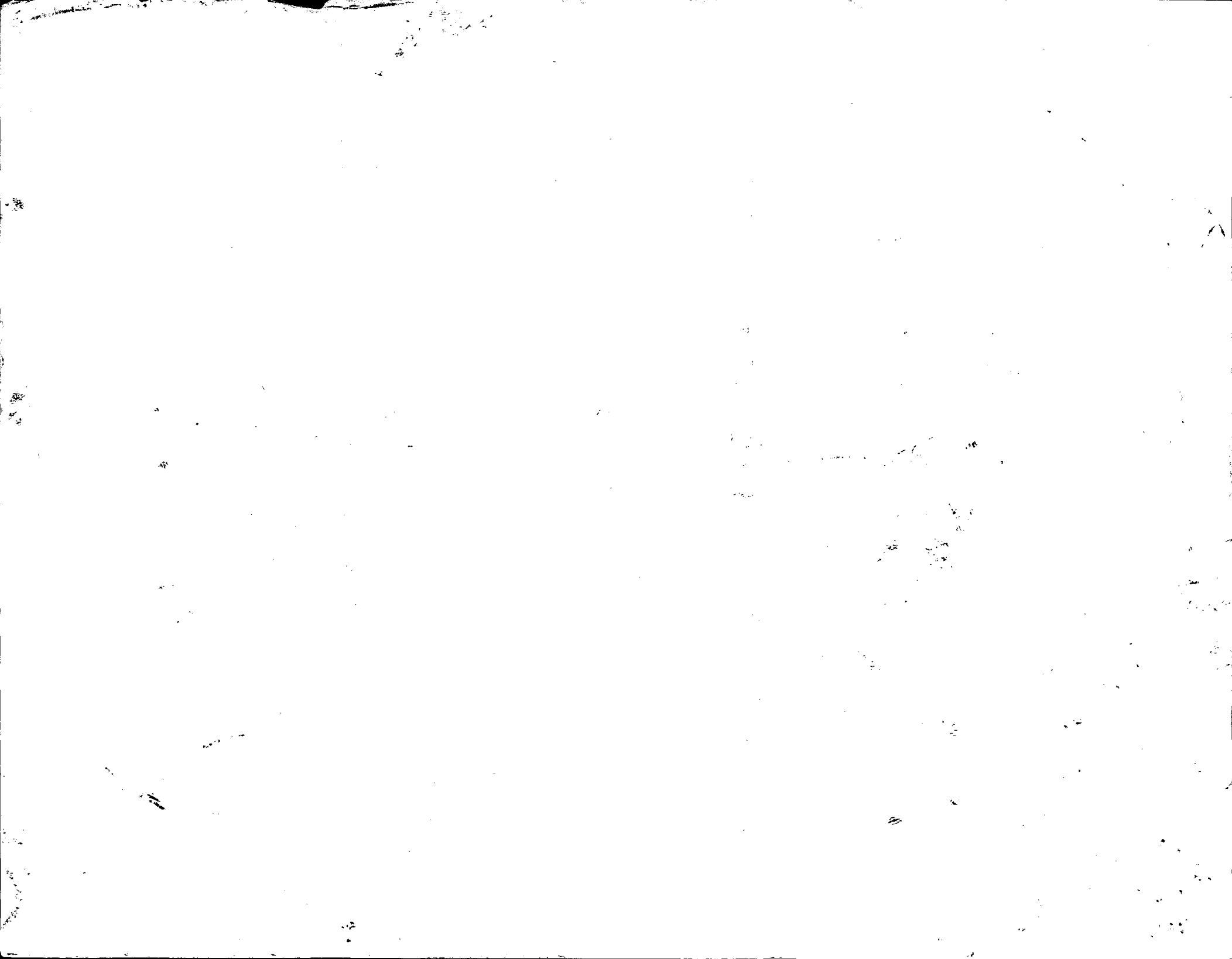


Comment: LANDING GEAR RESOURCE 1

1-Drill Rivet holes as per Dwg D412-664-245 using DT8972.

2-Drill pilot holes in tube as per Dwg D412-664-245

Jan/V 8-2-7



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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 37023

Part Number: D412664205

Job Number:



Seq. #:

Machine Or Operation:

Description :

3-Ream hole to finish size in tube as per Dwg D412-664-245

4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-245

1/4 8-2-7
AWM 8-2-8

14.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat Tube & Cuffs as per QSI 005 4.1

AWM 8-2-8

15.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

16.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

17.0

OUTSIDE SERV.10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 038Or

Issue P/O: LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

NIA

18.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage

Ensure copy of NDT results attached to work order.

HA1 ONLY

19.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: Inspect for damage & ensure results are as per Dwg D412-664-203

20.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Rivet Cuffs as per Dwg D412-6647-245. with Sika flex in Between tube & Cuff

A/R SIKAFLEX -2411-291

BATCH:

1105C188

Ex2. 8-7-30

1/4 8-2-8

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 37023

Part Number: D412664205

Job Number:



Seq. #:

Machine Or Operation:

Description :

21.0

CR3212407

CHERRY RIVET



Comment: Qty.: 44.0000 Each(s)/Unit Total : 44.0000 Each(s)

CHERRY RIVET

Batch: M104071

(52)

K 8-2-8

22.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

M/08/02/09

(1)

23.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Wrap in plastic bag to protect from scratches

2T 08-02-11

24.0

D31891

Chafing Shield



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Chafing Shield

Batch: 36065

2T 08-02-11

25.0

D3595

Rubber Cushion (per sq ft)



Comment: Qty.: 0.0536 sf(s)/Unit Total : 0.0536 sf(s)

Rubber Cushion

Cut to .630" X 5.7" X 2PCS

Batch: 75126

2T 08-02-11

26.0

D28961

Support



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number

Description Batch

1 D2896-1

Support 30200

2T 08-02-11

Date: Friday, 25/01/2008 1:15:55 PM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 37023

Part Number: D412664205

Job Number:



Seq. #:

Machine Or Operation:

Description :

27.0

D2856600

Abrasion Strip



Comment: Qty.: 0.9450 f(s)/Unit Total : 0.9450 f(s)

Abrasion Strip

2 X D2856-600-1009

Batch: 36398

RT 08-02-11

28.0

MS2192028

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-28 Clamp 106864

RT 08-02-11

29.0

MS2192030

clamp(per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

clamp(per MIL-DTL-8783C)

batch: 106870

RT 08-02-11

30.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Assemble as per Dwg D412-664-245

Install Chaffing Shields

Instal support with magnobond 6398 per dwg D412-664-245,
cure for 12hrs before packaging.

RT 08-02-11

Time & date of application: 12:00 08-02-11

Batch: 106695

31.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

68/2/12 (40)

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 37023

Part Number: D412664205

Job Number:



Seq. #:	Machine Or Operation:	Description :
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32.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1
Pick Packing Kit

33.0	AN640A	Bolt
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Bolt
Batch: _____

34.0	AN641A	Bolt
------	--------	------



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)
Bolt
Batch: _____

35.0	MS21042L6	Nut
------	-----------	-----



Comment: Qty.: 6.0000 Each(s)/Unit Total : 6.0000 Each(s)
Nut
Batch: _____

36.0	AN960JD616	Washer
------	------------	--------



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s)
Washer
Batch: _____

37.0	QC4	INSPECT 100% KITS FOR COMPLETENESS
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Comment: INSPECT 100% KITS FOR COMPLETENESS

38.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: HAND FINISHING RESOURCE #1
Identify and pack for shipping as per PPP D412-664-105

Handwritten signature/initials

Date: Friday, 25/01/2008 1:15:55 PM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 37023

Part Number: D412664205

Job Number:



Seq. #:

Machine Or Operation:

Description :

39.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08-02-12

Job Completion



08-02-12

DART

DESIGN <i>90</i>	DRAWN BY <i>90</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D412-664-245	REV. C SHEET 1 OF 3
DATE 07.03.29		TITLE CROSSTUBE ASS'Y (412 LOW-N AFT) NTS	
A	06.12.01	NEW ISSUE	
B	07.03.01	CHG CUFF AREA, CHG RUBBER CUSHION	
C	07.03.29	CHG RIVET AND RUBBER CUSHION	

RELEASED07.04.24 *[Signature]***PARTS LIST:**

Qty	Part Number	Description
X	D412-664-245	CROSSTUBE ASSEMBLY (412 LOW-NARROW AFT)
1	D6009-129	CROSSTUBE
2	D2856-600-1009	ABRASION STRIP
1	D2896-1	SUPPORT
2	D3188-1	CHAFING SHIELD
2	D3595-063-570	RUBBER CUSHION
2	D3606-1	CUFF
44	CR3212-4-07	RIVET (OR M7885/3-4-07)
4	MS21920-28	CLAMP
2	MS21920-30	CLAMP (OR MS21920-32)
A/R	MAGNOROND 6398	ROCKWELL SPECIFICATION RR01-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299 047-100, TYPE II, CLASS 2 ADHESIVE)
A/R	SIKAFLEX 241/291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

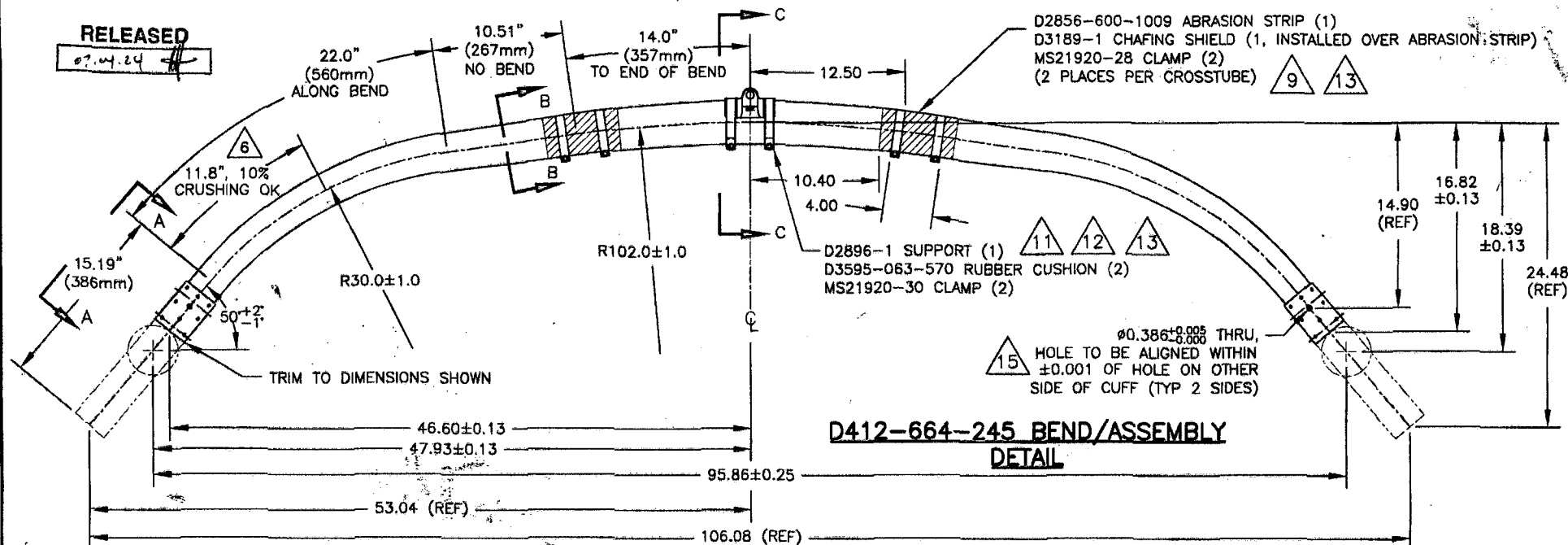
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 010 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6009-129
FINISHED LENGTH = 123.59±0.020 (BEFORE BENDING/TRIMMING)
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 6.2
PAINT OUTSIDE PER DART 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART, BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 RADIUS. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) MARK PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM ANY LAC, DIRT, OR SURFACE SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CONSPICUOUS MARKS ARE NOT ACCEPTABLE.
- 11) APPLY A COAT TO 2 COAT THICK LAYER OF MAGNOROND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 16 HOURS AFTER WHICH IT MAY BE PAINTED WITH THE CONVERSION COAT PER QSI 005 4.1.
- 12) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
- 13) TORQUE CLAMPS 60 TO 100 INCH POUNDS. ENSURE ALL CLAMPS ARE TIGHT AND SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 14) INSTALL D2896-1 OVER THE CHEMICAL CONVERSION COAT BUT BEFORE PAINT. WHEN A COAT OF PAINT IS APPLIED TO THE CUFF AREA, IT MUST BE APPLIED TO THE ENTIRE CUFF AREA AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 15) TORQUE UP HOLES WITH CHEMICAL CONVERSION COAT.

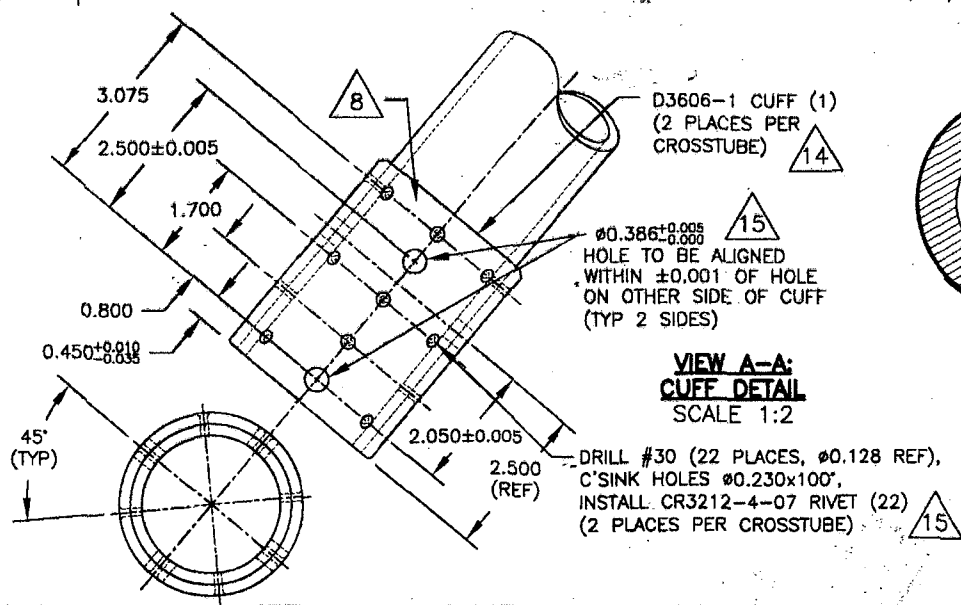
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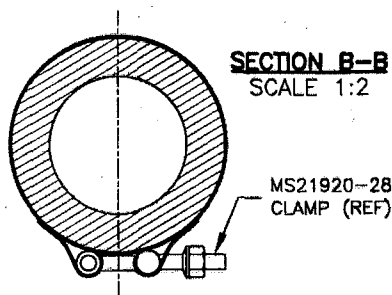
RELEASED



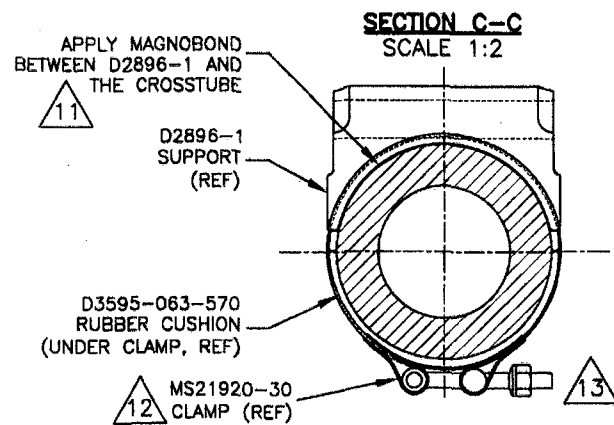
**D412-664-245 BEND/ASSEMBLY
DETAIL**



**VIEW A-A:
CUFF DETAIL
SCALE 1:2**

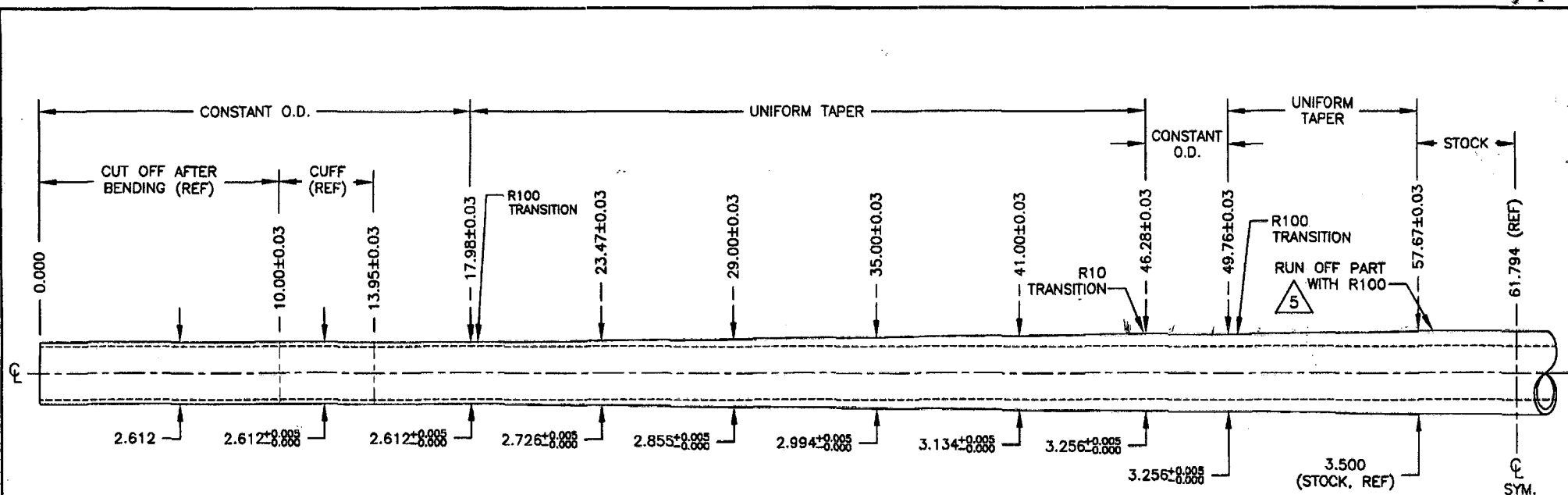


**SECTION B-B
SCALE 1:2**



**SECTION C-C
SCALE 1:2**

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DATE 07.03.29		TITLE CROSSTUBE (412 LOW-NARROW AFT)		SCALE 1:3	



D412-664-245 MACHINING DETAIL

RELEASED

07.04.19

123.61

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DATE		07.03.29		DRAWING NO.		D412-664-245	
TITLE		CROSSTUBE (412 LOW-NARROW AFT)		REV. C		SHEET 3 OF 3	
SCALE		1:4					

DART AEROSPACE LTD		Work Order:	
Description:		Part Number:	
Inspection Dwg:	Rev:	Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

☐ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
2.612	+/- .010	2.608	✓			
2.612	+ .005	2.613	✓			
2.612	+ .005	2.615	✓			
2.726	+ .005	2.728	✓			
2.855	+ .005	2.857	✓			
2.994	+ .005	3.000	✓			
3.134	+ .005	3.139	✓			
3.256	+ .005	3.258	✓			
3.256	+ .005	3.261	✓			
3.500 STK	+/- .010	3.501	✓			
2.612	+/- .010	2.608	✓			
2.612	+ .005	2.613	✓			
2.612	+ .005	2.616	✓			
2.726	+ .005	2.732	✓			
2.855	+ .005	2.860	✓			
2.994	+ .005	2.997	✓			
3.134	+ .005	3.136	✓			
3.256	+ .005	3.255	✓			
3.256	+ .005	3.259	✓			
3.500 STK	+/- .010	3.501	✓			
123.59	+/- .020	123.605	✓			

Measured by: <i>RP</i>
Date: 08/02/01

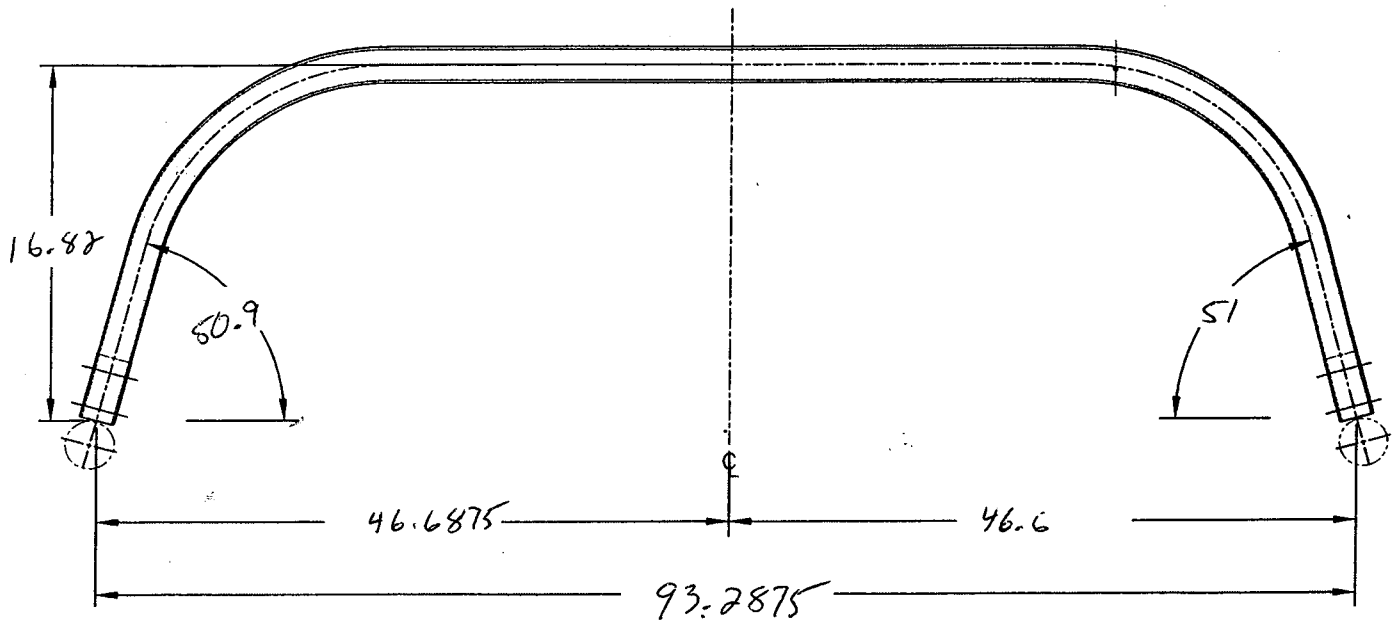
Audited by: <i>[Signature]</i>
Date: 08-02-06

Prototype Approval:
Date:

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/RF	

DART AEROSPACE LTD		Work Order:	<i>B37023</i>
Description: Crosstube Low Narrow Aft (412)		Part Number:	D412-664-205
Inspection Dwg: D412-664-245 Rev: C			Page 1 of 1

Required Dimension	Min	Max
Height	16.69	16.95
1/2 Span	46.47	46.73
Angle	49°	52°
Total Span	92.94	93.46



Comments

QC15 Inspection	<i>[Signature]</i>
Date	<i>08.02.07</i>

Rev	Date	Change	Revised by	Approved
A	07.04.27	New Issue	KJ/JM	<i>[Signature]</i>

